USAWC STRATEGY RESEARCH PROJECT

CAMPAIGN QUALITY GAP: DEVELOPING STRATEGIC ENGINEERING COMPETENCY

by

Colonel Roger A. Wilson, Jr.
United States Army

Colonel Kevin Weddle
Project Adviser

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
30 MAR 2007	**Strategy Research Project**	**00-00-2006 to 00-00-2007**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Campaign Quality Gap Developing Strategic Engineering Competency	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
Roger Wilson	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
U.S. Army War College,Carlisle Barracks,Carlisle,PA,17013-5050	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT
See attached.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**29**	

ABSTRACT

AUTHOR: Colonel Roger A. Wilson, Jr.

TITLE: Campaign Quality Gap: Developing Strategic Engineering Competency

FORMAT: Strategy Research Project

DATE: 30 March 2007 WORD COUNT: 7723 PAGES: 29

KEY TERMS: Leader Development, Stability Operations, Engineer Support

CLASSIFICATION: Unclassified

Recent policy developments in the Department of Defense (DOD) impose new and significant challenges for the Nation's strategic engineering directorate, the US Army Corps of Engineers (USACE). DOD Directive 3000.05 requires the Army to ensure specified programs and the quantity and quality of personnel needed for Stability, Security, Transition and Reconstruction Operations (SSTR) are developed, specifically engineers. Success in SSTR relies heavily on a highly competent Army engineering component. The Army will look to its transformation efforts and "pentathlete" leader development model as significant steps in the right direction. This paper assesses these Army-level initiatives with respect to engineer officer leader development in order to determine if additional quantity and quality measures are required to successfully perform critical SSTR engineering tasks among other ongoing engineering priorities. Recommendations are provided to enhance the Army's overall SSTR engineering effectiveness while developing engineer leaders with campaign quality competence.

CAMPAIGN QUALITY GAP: DEVELOPING STRATEGIC ENGINEERING COMPETENCY

> The campaign quality of an Army thus is not only its ability to win decisive combat operations, but also its ability to sustain those operations for as long as necessary, adapting them as required to unpredictable and often profound changes in the context and character of the conflict. The Army's preeminent challenge is to reconcile expeditionary agility and responsiveness with the staying power, durability, and adaptability to carry a conflict to a victorious conclusion no matter what form it eventually takes.[1]
>
> —Honorable Les Brownlee and General Peter J. Schoomaker
> Acting Secretary of the Army and Chief of Staff, U.S. Army

Policy Developments within Department of Defense

From the post-Viet Nam "we fight and win decisively" mentality to the emerging "we do what the Nation requires" imperative, the Department of Defense (DOD) and its subordinate departments are faced with a new reality. Brought about by an assessment of current commitments in Iraq and Afghanistan and the recognition of the U.S. Military's historic and unique capacity to perform activities "which lead to sustainable peace while advancing U.S. interests"[2] the DOD's culture, in part, is changing. In November 2005, DOD Directive 3005.5, Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations mandated the adoption of SSTR as a core competency commensurate with combat operations. This not only codified the change in mission focus, it further requires the Army (and other services) to ensure specified programs and the quantity and quality of personnel needed for SSTR are developed, specifically mentioning engineers.

Success in SSTR under DOD Directive 3000.5 relies heavily on a highly competent strategic engineering component. The Army will look to its modularity efforts, force structure rebalancing, force generating model, and "pentathlete" leader development model as significant steps in the right direction to meet SSTR requirements. While these changes are necessary for the prosecution of the Global War on Terrorism (GWOT) and the 21st Century security environment, the Army must determine if its programs not only provide for an expeditionary Army capable of fighting wars, but also a campaign quality Army capable of winning them. This paper assesses these Army-level initiatives with respect to engineer officer leader development and asserts the need for additional quality and quantity measures if we are to ensure the necessary strategic engineering expertise is developed to aid in winning the peace abroad, safeguarding the homeland, and providing installations supportive of both.

Reconstruction Defined

Many writings surrounding the topic of SSTR wrestle with the philosophical distinctions between peacekeeping, nation building, post-conflict operations, and stability and reconstruction operations. Dr. Conrad Crane proposes the term "transition operations" as the overall military intent is to return the environment to relative peace under civilian control.[3] Until recently, there were no approved DOD definitions for stability, security, transition, or reconstruction as individual operational subsets of SSTR. This changed in December 2006 with DOD's issuance of the Military Support to Stabilization, Security, Transition, and Reconstruction (SSTR) Operations Joint Operating Concept (JOC). In this document, reconstruction is defined as "the process of rebuilding degraded, damaged, or destroyed political, socio-economic, and physical infrastructure of a country or territory to create the foundation for longer-term development."[4] One of the six major mission elements (MME) contained in the JOC is the reconstruction of a nation's critical infrastructure and restoration of essential services.[5]

Next the Army will evaluate its doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) to account for this and other MMEs associated with the JOC. As stipulated in DOD Directive 3000.05, a key component of this evaluation will focus on leader development and the Army's leader development processes intended to ensure the provision of the quantity and quality of engineers with SSTR competence necessary for campaign level success.

Leader Development Process

Department of the Army Pamphlet 600-3, Commissioned Officer Professional Development and Career Management, governs leader development for all commissioned officers, regardless of military occupational skill. Philosophically "leader development is the means for growing competent, confident, self–aware leaders who are prepared for the challenges of the future in combined arms, Joint, interagency, intergovernmental, and multinational operations…" and they are "comfortable with ambiguity, information systems literate, and capable of intuitive assessments of situations for rapid conceptualization of friendly courses of action."[6] According to the pamphlet, the leader development process is contained in three domains: institutional training, operational assignments, and self-development.[7] Through this process "the Army develops leaders with character and competence for today and tomorrow to be trainers, role models, and standard bearers. Leader development through progressive, sequential, and continuous education and experience throughout one's career benefits the Army and the leader."[8]

In 2001 the Army Training and Leader Development Panel's (ATLDP) Officer Study Report concluded:

> The Army depends on leaders and units that have the requisite leader competencies to execute full spectrum operations. They must thrive in a complex environment marked by the challenge of high-intensity combat and the ambiguities inherent in stability operations and support operations. They require competencies that are matched to those new operating conditions…[9]

The panel also revealed that in the area of leader development the field raised two significant issues with regard to leader development. First, officers noted that the personnel management requirements (Army requirements) determine where officers are operationally assigned and that this is frequently done at the expense of opportunities for quality leader development. Second, officers voiced concern that the officer education system does not adequately provide them the skills needed for full spectrum operations.[10] These two criticisms not only represent negative personal perceptions regarding leader development in the Army, but anecdotally indicate significant emerging problems within two of the leader development domains: institutional training and operational assignments.

Since the ATLDP study was conducted prior to September 11, 2001 and the ensuing GWOT, the Army commissioned another study in July 2005, The Review of Education, Training and Assignments for Leaders (RETAL) Study, to review the findings of the ATLDP study and "ensure the leader development process was capable of producing the right kind of leaders for the 21st century."[11] The RETAL study concluded that the leader development process needed paradigm adjustments to account for the changed environment which in turn created "full spectrum" capability gaps in areas such as cultural awareness, governance, non-kinetic expertise, and enterprise management/strategic leadership.[12] Although completed prior to the DOD SSTR policy pronouncement in November 2005, the RETAL Task Force considered the immense challenges being posed by ongoing stability operations when determining the capability gaps with perhaps one exception. Equally important to reducing gaps in cultural awareness, governance, and strategic leadership is assessing and closing officer development gaps in science and technology related career fields like engineering. If left undeveloped, these technical capabilities, essential for the restoration of governmental services, infrastructure repair, and humanitarian needs in stability operations, may lead to stalled or failed reconstruction efforts, resurgent violence, and a return to insecurity.

Key Engineer Tasks in Support of SSTR Operations

Central to the engineer officer leader development discussion is obtaining a clear understanding of the key engineering tasks and competencies associated with reconstruction operations. The State Department's Office of Coordination for Reconstruction and Stabilization developed a list of potential engineering related activities during stabilization operations. These range from the repair and restoration of public works including port facilities, airports, dams, railroads, roads, and canals to potential requirements to repair and restore public utilities such as power, water, gas, sewage, and garbage collection.[13] Dr. Conrad Crane and Dr. Andrew Terrill similarly concluded these tasks as essential, critical, or important to post-conflict reconstruction.[14] In Iraq, one can add the disposal of stockpiled munitions and the restoration of the country's crude oil, liquid petroleum gas, and natural gas infrastructure, key components of the country's economy. DOD's reconstruction effort is ongoing in Iraq under the principle direction of USACE's Gulf Region Division (GRD) combined with the Project and Contracting Office (PCO).[15] A review of GRD's progress report for December 2006 reveals the completion of over 3,012 reconstruction projects for over $8.14 billion, with an additional 775 projects for $3.91 billion requiring completion.[16] These projects reside mainly in the electricity (generation, operations and maintenance, transmission, and distribution), oil and gas (production, distribution, and storage), public works and water (sewage, irrigation, sanitation, treatment, storage, and distribution), and building facility (health, education, security and justice, transportation, and communications) sectors of the Iraqi economy.[17]

In Afghanistan, Uzbekistan, Turkmenistan, Kazakhstan, Kyrgyzstan, Pakistan, and Tajikistan USACE engineers are "working closely with an international community" and "helping to lead the way with over 400 kilometers of district roads, micro-hydro power, dams, irrigation systems, schools and clinics" valued at nearly $1.8 billion[18] with another $1.8 billion allocated for 2007.[19] According to LTG Karl W. Eikenberry, former commander of Combined Force Command – Afghanistan (CFC-A), these engineers are not only changing the landscape, but "shaping society" by "transferring their skills to a generation of Afghans who are now learning principles of construction and construction management…"[20] This transition of skills and knowledge provides for greater autonomy and stability, a key purpose of SSTR operations.

New Challenges, Complexities, and Implications

As highlighted by Dr. Crane, the US State Department, USACE, and the Gulf Region Division, this is not business as usual. In theory and in practice, SSTR presents many new and challenging tasks for engineers different from traditional mobility, countermobility, survivability,

and general engineering combat related tasks trained and exercised over the past several decades.

Despite these extraordinary reports of recovery made in Iraq and Afghanistan, many significant challenges remain. In Iraq, "although DOD has made some progress in restoring Iraq's essential services, it has not met program goals."[21] In a recent Government Accounting Office (GAO) report it was noted that "many reconstruction projects have fallen short of expectations, resulting in increased costs, schedule delays, and reduced scopes of work…that have contributed to the inability of the United States to fully meet its goals with respect to oil, electricity, and water sectors."[22] Much of the shortfall in Iraq can be attributed to the challenging security environment, persistent attacks on U.S.-funded infrastructure projects, increased demand for services, corruption, and the inability of Iraq's various ministries to sustain infrastructure, however, other challenges exist.

Reconstruction as part of a foreign policy SSTR effort is complex and requires a broad but detailed interagency strategic plan and planning process prior to the existence of the emergency condition.[23] In Iraq, reconstruction control progressed from the Office of Reconstruction and Humanitarian Assistance (ORHA) to the Coalition Provisional Authority's (CPA) Program Management Office (PMO). Later control moved to the Iraq Reconstruction Management Office's (IRMO) Project and Contracting Office (PCO) which merged with the Army's Gulf Region Division of USACE. These transitions occurred in just over a year, from May 2003 to June 2004,[24] often resulting in changes of direction and priorities. Reconstruction is extraordinarily technical, as evident from the previously addressed tasks, requiring technically educated, trained, and competent professionals capable of ensuring safety, quality, and effectiveness. Many organizations other than DOD such as the United States Agency for International Development (USAID) conduct reconstruction raising serious concerns regarding unity of effort. How and who integrates and prioritizes these critical efforts and their associated resources to achieve the desired political effects is of supreme importance. To better illustrate these points, in Afghanistan USACE engineers find it "imperative that CFC-A's efforts are coordinated in order to minimize duplication of effort and to make sure the right area is targeted at the right time with the right effort" and given that "no one single body oversees coordinating infrastructure development in the country, CFC-A must aggressively work to deconflict its efforts with others."[25] U.S. reconstruction efforts are meant to be speedy to minimize despair and disquietude. Yet the funding and obligation of reconstruction funds is encumbered with "contracting and procurement problems that plague the U.S. government."[26] And finally,

reconstruction efforts take time requiring National persistence, detailed oversight, and a sufficient depth of competent engineering professionals for protracted operations.

Understood by the authors of DOD Directive 3000.05, these challenges and complexities present significant long term implications for force structure and leader development programs. According to the JOC, "the efforts throughout the Department of Defense (DOD) devoted to planning, organizing, training, equipping and otherwise preparing to conduct SSTR operations will be very substantial, roughly comparable to those devoted to preparing for major combat operations."[27] Army transformation initiatives such as modularity and the pentathlete leader development model must adequately address the requirement to develop reconstruction expertise and capability.

Assessing Army Modularity

The Army's Modular Force Initiative, or modular conversion, is perhaps the most critical component of Army Transformation. Modularity changes the Army's structure from a division-centric force that was designed to win the Cold War to one focused on brigade combat teams (BCT) that are more responsive to the varied requirements of combatant commanders. Modular brigades are standardized, self-sufficient, and better able to operate across the joint, interagency, and multinational spectrum of operations. A modular force transforms the Army into more agile, lethal and deployable units; emphasizes the importance of reducing the logistical tail; accelerates the integration of new technologies, doctrine, and training methods into units in contact with the enemy; and accelerates the advancements in training and education – creating more adaptive leaders.[28] Modularity increases the number of BCTs to 70 (42 Active and 28 National Guard) in order to form a rotational pool of combat forces by the year 2011, and it provides for more than 200 support brigades of various types.[29] According to the Army's Comprehensive Guide to Modularity, a modular force is deemed essential to the establishment of a campaign-quality Army capable of meeting the security challenges of the 21st Century.[30]

SSTR Capability Questioned

While the Army considers its modularized structure more able to meet 21st Century "full spectrum" threats, there is criticism and skepticism regarding its ability to perform SSTR. The current modular design does not provide for a modular and scalable force pool of stabilization capabilities; it does not provide for a multifunctional support brigade capable of exercising command and control of stabilization operations; and it does not generate an adequate mix of active and reserve modular components needed for stabilization operations.[31] A recent

Congressional Research Study report concluded that "while the modular force may be optimally designed to conduct rapid, decisive combat operations, it may not have the appropriate command and control formations or the right mix of support units such as engineers…to successfully conduct stabilization operations."[32] This has far-reaching effects as "recent history suggests that it is no longer sufficient to simply defeat an adversary on the battlefield and that combat operations must be able to rapidly and successfully transition to security and stabilization operations in order to reduce the possibility of ensuing civil war or insurgency."[33] As the United States enters its sixth year of continuous combat operations in the Global War on Terrorism, there are legitimate concerns of a resurgent Taliban in Afghanistan and insurgency in Iraq. Given these concerns, perhaps it is time to "revisit the Army's modular force structure to determine if it is properly configured to conduct stabilization operations."[34]

The Government Accounting Office (GAO) provided testimony to the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives, that reinforces these concerns. In their testimony they highlight that although the Army is analyzing lessons learned from Iraq and training events, the Army does not have a long-term, comprehensive plan for further analysis and testing of the designs and fielded capabilities of the modularized Army and that Army officials do not provide sufficient validation, or provide a comprehensive evaluation process, of the modular unit designs.[35] The report goes on to point out that the Army does not plan to conduct "overarching analysis to assess the modular force capabilities to perform operations across the full spectrum of potential conflict"[36] even though some experts question whether the modular designs "provide the best mix of capabilities to conduct full-spectrum operations."[37] It is argued that "without performance metrics and a comprehensive testing plan, neither the Secretary of Defense nor congressional leaders will have full visibility into the capabilities of the modular force as it is currently organized, staffed, and equipped" and that "once the Army gets more operational experience with the new modular units, it may find it needs to make further adjustments to its designs."[38]

In the Military Support to SSTR Operations JOC, authors identified several risks to DOD's ability to perform successful SSTR. The JOC assesses as a high risk the likelihood the "U.S. interagency community will not develop sufficient amounts of the kinds of deployable civilian capabilities needed to conduct an extended SSTR campaign"[39] and recommends working with the National Security Council, U.S. departments and agencies, and Congress to gain the support needed to build SSTR-related civilian capabilities in the interagency. This implies that most of the SSTR burden will be placed on DOD. It was also determined that if "DOD force structure and force management policies will not facilitate the recruitment, development,

rotation, and sustainment of sufficient military personnel for extended duration and manpower intensive SSTR operations"[40] that DOD's ability would be diminished. To mitigate this medium risk the authors recommend the "development and experimentation of innovative concepts that enable the Joint Force to conduct SSTR operations without a dramatic increase in manpower, e.g., the development of niche and surge capabilities…"[41] With a limited interagency capability and constrained DOD force structure, it becomes increasingly important to identify what these "niche and surge" capabilities are and where they reside in order to best prepare and develop them for future realities.

Engineer Force Structure a Bill Payer – Strategic Risk

One of these surge capabilities is engineering, a capability that is on the decline in the U.S. Army. "The Army plans to achieve its modular restructuring without permanently increasing its active component end strength above 482,400 soldiers."[42] To realize modularity without increasing end strength "the Army is eliminating less-used force structure to resource additional infantry capabilities and high demand units such as military police, transportation and civil affairs"[43] Converting less-used structure will "increase its capabilities sufficiently to relieve the stress on high demand/low density units."[44] The plan calls for the restructuring of over 100,000 spaces from the Reserves into the Active duty by 2009. "This rebalancing is also intended to place more combat support and combat service support units back into the active component from the Reserves to improve overall deployability and sustainability, as well as to reduce requirements for immediate mobilization of reserve units."[45] Subsequently, the Army removed 20 engineer brigade headquarters, 35 engineer battalion headquarters, and over 19,000 engineers from the structure.[46] Only 10.6% of the total Army engineer force structure remains imbedded into the modularized Army with an engineer company constituting the largest organic engineer unit within the Army's centerpiece formation, the modularized BCT.[47]

The overall reduction of engineer presence and capability within the BCT and the elimination of engineer battalion and brigade level headquarters across the total Army have significant tactical, operational, and strategic implications. Without adequate engineer force structure to include command and control, successful transition from decisive combat operations to SSTR will be slowed, increasing the potential for human suffering and unrest. While the Army's Engineer Regiment gets smaller due to modularity and restructuring, and with three-quarters of the regiment residing in the reserve component only accessible one year out of every six years due to Army Force Generation Model (ARFORGEN) rules, the Army is incapable of generating an adequate engineer force mix for the conduct of SSTR on a continual,

campaign-level basis. Engineer units do not fit the definition of less-used force structure, and during his 2007 Posture Statement before the Senate Armed Services Committee, former Secretary of Defense Donald H. Rumsfeld stated "soldiers who are infantry, military police, civil affairs and engineers have been in high demand during the Global War on Terror…"[48] In fact, every active and reserve component engineer combat unit has deployed once in support of either Operation Iraqi or Operation Enduring Freedom, and active component engineer combat and construction units have completed their third rotations to Iraq and Afghanistan.[49] Engineer units are not meeting ARFORGEN rules in both the active and reserve components, and few active units are meeting "dwell time" goals.[50]

Another example of where engineer force structure paid for modularity is the elimination of military directors of public works (DPW) on military installations. Not identified as "military essential" under the Federal Activities Inventory Reform Act (FAIR), military DPWs were targeted for civilian conversion in support of growing additional brigade combat teams, and Total Army Analysis (TAA) 09 eliminated military DPW authorizations.[51] This decision was not universally popular at the time. Then Commanding General of I Corps and Fort Lewis, Lieutenant General Edward Soriano stated:

> …in modern combat, we need the flexibility to have individuals with the requisite skills to deploy to maturing theaters of operations, such as Afghanistan or Iraq, to oversee reconstruction efforts while still ensuring proper force protection efforts. The skills gained as a DPW in managing a large civilian workforce, working with labor unions, managing contract labor, and directing major projects in a community are combat multipliers when we deploy our military officers on short notice for nation building efforts.[52]

The Installation Management Command (IMCOM) is now seeking to restore military DPWs at 22 installations to oversee massive military construction efforts at the various power support and power projection installations, and have created a new position on the garrison staff entitled Deputy Garrison Commander for Transformation (filled by an engineer) as a stop gap measure. Resistance to the proposal to reverse the decision that eliminated military DPWs is considerable, however, primarily due to the inability to identify bill payers. In addition to Lieutenant General Soriano's comments, many advocate a need for increased engineer effort during post hostilities and SSTR in order to quickly restore critical life-support services and rebuild physical infrastructure necessary to return to normalcy. Eliminating engineer force structure ignores these acknowledgements, jeopardizing the Army's ability to meet the joint force commander's demands during SSTR.

In response, the U.S. Army Engineer School, the proponent for the Army's Engineer Regiment, conducted a complete force design update (FDU) aimed at providing the Joint force

commander an expeditionary engineer force pool of baseline forces (building blocks), mission module forces (specialized blocks), and engineer brigade C2 headquarters capable of expeditionary missions. Baseline and mission module forces provide the essential modular engineering building blocks necessary for early SSTR operations - combat engineering and construction support in addition to brigade and battalion command and control headquarters.[53] At the operational level additional changes were implemented in order to become more scalable and responsive to SSTR operations. Derived mainly from operational experiences in Bosnia and Kosovo where surge engineer support was required to quickly establish, maintain, and expand infrastructure to support contingency forces, the concept of Field Force Engineering (FFE) emerged.[54] FFE put forth a standing organizational structure to provide comprehensive construction and facilities management planning to the Joint force. Regional USACE division headquarters and the 412th and 416th Engineer Commands (ENCOM) now align with regional combatant commanders through the Army Service Component Commands (ASCC) and provide modular engineer support capabilities as required. In USACE examples of modular units include Forward Engineer Support Teams (FEST), Contingency Real Estate Teams (CREST), Environmental Support Teams (ENVST), Base Development Teams (BDT), and Infrastructure Assessment Teams (IAT). The two ENCOMs organized a 405-person Facility Engineering Group (FEG) comprised of separate deployable Facility Engineer Detachments (FED) and Facility Engineer Teams (FET). Together these modular elements of USACE and the ENCOMs provide the full range of Director of Public Works (DPW) facilities management capabilities for expeditionary forces based overseas during contingency operations.

These efforts, however, do not translate into strategic reconstruction capability. Reconstruction, as defined with its associated key tasks and complexities, exceeds the technical capability of the Future Engineer Force and Field Force Engineering initiatives aimed at tactical and operational challenges. The current reconstruction solution in Iraq and Afghanistan is to surge USACE, a non-tactical organization comprised predominately of Department of the Army civilians, to places like Baghdad, Tikrit, Tallil, and Kabul. While USACE is not structurally affected by Army modularity initiatives in a traditional “bill payer” sense, USACE formed “out of hide” a provisional division headquarters with three subordinate districts in Iraq and a provisional district in Afghanistan to manage billions of dollars in reconstruction, a key component of the U.S. strategy in the “long war.” Not on par with the Army’s priority to man modular brigade combat teams and support brigades, USACE’s approach to manning its provisional surge structure on an ad-hoc basis leaves manning gaps in its multi-billion dollar day-to-day military construction and civil works mission.

This policy-resource gap created by increased engineer requirements, force structure shifts and reductions, and the lack of manning priority induces broad and profound strategic risk to a myriad of Army and national priorities. Included in these priorities are SSTR operations in support of the Joint force commander, military construction in support of transformation initiatives, Global Rebasing, Base Realignment and Closure (BRAC), support to civil authorities in response to disasters under the National Response Plan (NRP), and execution of the federally funded Civil Works program which grows by 9% to $4.871 billion in 2008.[55] Many of these priorities directly or indirectly support the Army's ability to generate and project expeditionary combat power necessary to respond to 21st Century strategic threats. Closing this gap will require comprehensive adjustments across all facets of Army force development including the methods for developing strategic engineering competency.

Considerations for the Pentathlete Leader Development Methodology

In October 2005 former Secretary of the Army Francis J. Harvey wrote:

> The Army's vision for leaders in this century is that of the Pentathlete-a multiskilled leader who personifies the warrior ethos in all aspects, from war fighting to statesmanship to enterprise management…As such, our training programs at the combat training centers and in the schoolhouses are further preparing leaders to operate in uncertain, ambiguous and complex environments.[56]

An SSTR operation, heavily reliant on DOD and a highly competent Corps of Engineers, represents one of these uncertain, ambiguous and complex environments. The Army's leader development model comprised of three domains – Institutional Training, Operational Assignments, and Self Development, will adjust its priorities, programs, and allocation of resources to compensate for the pentathlete leader development methodology. In doing so, it must also account for the need to develop advanced technical engineering skills in addition to broader, more diverse skills in governance, cultural awareness, language, and conventional and asymmetric war fighting. Given limited leader development resources and an unrelenting operational pace, focus on developing strategic generalists may push the need to train and develop critical engineering skills, from basic to strategic, aside.

Leader Development Domain One - Institutional Training

An example where these two necessities (developing technical capabilities and creating pentathletes) may be on a collision course is language training. Considered an essential element of cultural awareness, foreign language training and competency is moving to the head of the leader development class. Published in January 2005, the DOD Language

Transformation Roadmap directs the services to require the completion of language training for junior officers and to make foreign language competency a criterion for promotion to general officer.[57] In his article entitled "*Strategic Leadership Competencies*", Dr. Leonard Wong recommends the Army "begin growing strategic leader capability at the precommissioning level" in order to "align their precommissioning standards with the future needs of the Army."[58] In an example, Dr. Wong recommends formalizing two years of precommission foreign language training with the various commissioning sources.[59]

Researchers and policy makers must analyze and understand the effects of placing language requirements, either pre or post commissioning, on officers who must obtain, maintain, and develop strict technical competencies such as engineering. For example, in 2006 only 33% of the engineer second lieutenant cohort was accessed with an engineering or engineering related undergraduate degree.[60] Increasing requirements for engineer undergraduate students such as foreign language proficiency may have a significant negative impact on recruitment thus further reducing the percentage of degreed engineers being accessed into the Army. This is a dangerous consideration for several reasons. First, the battlefield architecture has changed. Current experience shows that today's expeditionary Army operates from self contained and quasi self-sufficient forward operating bases (FOB) many of which are austere with only basic health and living services. This trend is likely to continue as terrorist organizations seek safe haven in failing or failed states, or ungoverned spaces. Organic engineers, and those that may augment brigade combat teams on a FOB, perform a greater array of general engineering and facilities functions such as temporary construction, power distribution, and sanitation. Second, these FOBs often exist near or within population centers where critical reconstruction efforts are assessed. And third, officers without engineering degrees will have to spend a significant part of their leader development opportunities, to include self development, gaining the technical engineering competency necessary to serve at the senior company grade and field grade levels. This in turn will limit their ability to obtain other "pentathlete" developmental experiences.

For these reasons, Dr. Wong's concept of better aligning precommissioning requirements with the future needs of the Army deserves great consideration. There should be a closer correlation between undergraduate education and aligning future needs of the Army specifically when it comes to technical requirements such as engineering. In addition to better aligning undergraduate education with future requirements, adjusting the Army's Advanced Civil Schooling Program (ACS) and Expanded Graduate School Program (EGSP) opportunities to

better support the development of strategic engineering competency is also required. According to the Army's standing operating procedure for the EGSP:

> …the primary purpose behind this program is a renewed commitment to education, based on the view that education prepares leaders "how to think," and strengthens one's ability to think critically and to make accurate, informed decisions in complex, uncertain environments. Officers selected for graduate school will be trained in key disciplines that support the officer skill sets we need now and in the future.[61]

Currently, the Army Human Resources Command (HRC) allocates twelve of the Army's 412 funded ACS opportunities to the Engineer Branch of the Officer Personnel Management Directorate (OPMD). Used to obtain advanced degrees in engineering disciplines, these educational opportunities are followed by a 3-year utilization assignment within USACE where officers gain essential skills in managing large public funded military construction and civil works projects. To improve officer retention and develop pentathletes, the EGSP increases post-commissioning graduate school opportunity by over fourfold, from 412 to 1,914 for year groups 1998-2005.[62] The EGSP also offers 600 advanced civil schooling opportunities to pre-commissioned officers upon graduation from the United States Military Academy (USMA) or the Reserve Officer Training Corps (ROTC). While the combination of ACS and EGSP produces an extraordinary windfall of academic opportunities, the programs are not appropriately disciplined or focused. Given the adoption of SSTR as a core competency, methods to ensure an appropriate percentage of the ACS and EGSP opportunity is devoted to the development of technical expertise such as engineering are required. With less than one-half of one percent of the total opportunity officially dedicated to engineering (12 of 2,514 graduate school opportunities), the educational and leader development gap the EGSP was meant to address may only get minimally filled. In addition, these educational experiences should immediately be optimized through operational utilization or the value gained from the immediate application of learning is lost.

According to the ATLDP survey, despite the Training and Doctrine Command's (TRADOC) attempts to keep the Officer Education System (OES) relevant to the operational environment they fail to deliver a quality educational experience for full spectrum operations.[63] Derived from ongoing missions in Iraq and Afghanistan, other essential tasks that must compete for these valuable and limited resources within the institutional training domain are training with the interagency, training on military support to civil authorities, construction contracting, construction management, contingency military construction, procurement and acquisition, cost estimating, negotiating, public speaking, and public affairs.

Leader Development Domain Two – Operational Assignments

"The current system of senior leader development involves placing promising leaders in key assignments to expose them to a myriad of challenging and educational experiences before they assume roles as strategic leaders."[64] As previously discussed, engineer force structure is on the decline, an issue that not only presents challenges to initial SSTR success at the BCT level, but also poses significant implications for growing strategic engineer leaders. Less entry-level leader development opportunity yields reduced recruitment and a smaller pool from which to grow engineer leaders that will manage future reconstruction operations, amongst other engineering priorities. Assessing engineer force structure to ensure there is a sufficient quantity of junior officer leader development opportunities becomes a key component of developing strategic engineering capability. Subsequently, the Army must fill authorized engineer structure.

As of January 2007, across the Army only 69% of senior captain authorizations, 88% of major authorizations, and 93% of lieutenant colonel authorizations are filled. In USACE, the nation's strategic engineering directorate, only 78% of the engineer authorizations are filled despite direct support to combat operations and growing requirements in support of Army transformation, BRAC, Global Rebasing, and its standard civil works program. Assignments to USACE represent the greatest opportunity for developing strategic engineering competency as these assignments inherently contain joint, interagency, and intergovernmental elements that develop "…a trained engineering workforce, with world-class expertise, capable of responding to a variety of situations across the spectrum of national defense."[65] Several factors impact branch fill percentages such as attendance at OES opportunities and placement in branch immaterial assignments in support of Army requirements. In USACE, however, there is an additional constraint: reimbursement of military pay and allowances.

In accordance with Unites States Code, Title 33, Chapter 12, Section 583a, entitled "payment of pay and allowances of officers of Corps of Engineers from appropriation for improvements", the following applies:

> Regular officers of the Corps of Engineers of the Army, and reserve officers of the Army who are assigned to the Corps of Engineers, who are employed primarily on duty connected with nonmilitary public works prosecuted under the direction of the Chief of Engineers, including river and harbor improvements, flood control, and other such works, shall, while so employed, be paid their pay and allowances from the appropriation for the works upon which they are employed.

As mandated the Department of the Army (DA) is reimbursed from appropriations the pay and allowances for officers working within USACE on civil funded projects. In USACE, over 75% of the 302 active duty authorizations are coded for civil funding reimbursement. Many of

these authorizations are in districts that do not have robust civil works appropriations to offset the pay and allowances for military personnel. Instead district commanders hire and maintain DA civilians who provide greater continuity, and the civil funded military positions go vacant, evident by the 78% manning level in USACE. Consistent with what the ATLDP study concluded from interviews in the field, maintaining engineer officer shortfalls across the Army, particularly in USACE, is being done at the expense of engineer officer leader development and the development of engineering strategic competency.

The SSTR operations JOC states "the Joint Force must be capable of successfully conducting stability operations prior to, during, and after combat operations or as a stand-alone mission" and describes "stability operations as inherently interagency operations.[66] As such, engineers must be afforded greater joint service and interagency opportunities commensurate with SSTR responsibilities at the field grade and general officer levels. According to the December 2006 Personnel Management Authorization Document (PMAD) only 98 of the 2,158 total engineer authorizations in the active component are joint duty assignments (JDA). Of these 98, only 51 are on the Joint Duty Assignment List (JDAL), a requirement for Joint Specialty Officer (JSO) designation and promotion to general officer, and none are with the interagency. Restated another way, only 2.36% of all engineer authorizations in the Army (51 of 2,158) are capable of developing the necessary strategic and joint competence required in SSTR. Compared with other technical branches such as Signal (8.07%) and Military Intelligence (6.23%), engineer JDAL opportunity is lagging. As a consequence, with few JDAL opportunities for field grade leaders, engineers frequently rely on scientific waivers for promotion to general officer after which they can only "serve continuously in the specialized field or serve in a JDA before reassignment to a nonscientific and technical position."[67] These limitations on joint and interagency opportunity, and general officer utilization, do not provide for the engineer leader development required in the SSTR multiagency, multinational environment.

Leader Development Domain Three – Self Development

According to DA PAM 600-3 "institutional training and operational assignments alone do not ensure that Army officers attain and sustain the degree of competency needed to perform their varied missions" and that "leaders must commit to a lifetime of professional and personal growth to stay at the cutting edge of their profession."[68] The pamphlet goes on to say that "self development is the key aspect of individual officer qualification that solidifies the Army leader development processes."[69]

Some research, however, refutes the effectiveness of self development as critical to officer success. Table 1 shows relative rankings of five leader development elements from three senior officer groupings (lowest score represents the most influential element). In all three groups, operational assignments were deemed the most critical elements to success. Self development, however, received low scores from more direct leaders whereas senior strategic leaders rated self development as the second most influential element.[70]

Element	15 Brigade Command Selects (Direct Leaders)	16 Capstone Officers (Direct to Strategic)	17 Senior General Officers (Strategic Leaders)
Operational Assignments	1	1	1
Institutional Education	2	3	4
Mentorship Programs	3	2	3
Self Development	**5**	**4**	**2**
Other Developmental Experiences	4	5	5

Table 1.

Perhaps strategic leaders better recognize the value of self development, or perhaps because there are few institutional education opportunities for senior general officers they must rely more heavily on self development techniques to gain competence. Irrespective of the rationale, shortcomings in the Army's third leader development domain from the perspective of colonels and brigadier generals cannot be overlooked. In the article "*Strategic Leadership Competencies*" the authors point out that "too often, leader development is relegated to self-development despite the fact that self-development is often the first type of development to be overcome by events"[71] and "most officers in operational assignments have little time to enhance their own professional education, given the increasing tempo and frequency of military operations."[72] Emphasis on self development and the quality of self development programs is also questioned as these authors point out that "self-development must become more than a reading list of history books."[73]

The Army's self development domain is losing effectiveness and risks becoming irrelevant due to a lack of resources, poor emphasis, and a demanding operational tempo. The Army must explore new approaches to self development as it looks to create pentathletes for the 21st Century strategic environment. Through a disciplined self development process, leaders can obtain critical insights into strategic leadership competencies such as self and cultural

awareness, and professional and technical astuteness. To do so, the Army must reevaluate and reinforce its self development philosophy and methodology. Officers must be educated on the value of self development and life-long learning in the profession of arms, and the Army must establish concrete goals, objectives, and incentives for self development. The Army must take full advantage of the vast potential of automation and the internet in developing distributive learning techniques, reading lists, forums, journals, and repositories for current practices and lessons learned. The Army should investigate methods for virtual integration with the interagency at the state and federal level in order to enhance civil-military relations and increase awareness of congressional affairs. And, the Army must better promote association with professional organizations like the Society of American Military Engineers, the Army Engineer Association, and Veterans of Foreign Wars, and offset disincentives such as costly membership fees. Where possible, the Army must promote obtaining professional credentials such as the professional engineer (P.E.) license. Last, the value of a formal mentorship program should be considered where senior and junior leaders collaborate on individual leader development goals and objectives on a more personal level, and share experience that would enhance enterprise management. Today's poorly advertised voluntary program, linked to the Army Knowledge Online website, deserves a critical assessment.

Other Campaign Quality Considerations

Like DOD's focus on SSTR, the Department of Homeland Security (DHS) seeks a better trained and coordinated response to domestic incidents such as the terrorist attacks on 9/11 and the devastation caused by Hurricane Katrina. First published in December 2004, the National Response Plan (NRP) is a "concerted national effort to prevent terrorist attacks within the United States; reduce America's vulnerability to terrorism, major disasters, and other emergencies; and minimize the damage and recovery from attacks, major disasters, and other emergencies that occur."[74] In this interagency planning and response document USACE, as part of DOD, provides direct support to civil authorities as lead coordinating agency for Emergency Support Function (ESF) #3, Public Works and Engineering.[75]

The ESF #3, Public Works and Engineering Annex of the NRP organizes the "capabilities and resources of the Federal Government to facilitate the delivery of services, technical assistance, engineering expertise, construction management, and other support to prevent, prepare for, respond to, and/or recover from an Incident of National Significance."[76] Within the scope of the annex are activities such as "post incident assessments of public works and infrastructure; executing emergency contract support for life-saving and life-sustaining services;

providing technical assistance to include engineering expertise, construction management, and contracting and real estate services; (and) providing emergency repair of damaged infrastructure and critical facilities."[77]

In response to Hurricane Katrina (as of December 2006), USACE conducted over 1,300 power assessments, provided technical assistance in the construction of over 1,000 temporary housing structures, contracted for over $928 million in debris removal in Mississippi and Louisiana alone, installed over 194,500 temporary roofs, and provided over 170 million pounds of ice within the effected areas.[78] Additionally, USACE built over 25 miles of new levees and floodwalls, commandeered nearly 900 acres of real estate,[79] and pumped out of New Orleans over 220 billion gallons of water in 43 days.[80] In all, 59 projects were completed by USACE for over $800 million.[81]

The Defense Science Board Task Force on Institutionalizing Stability Operations within DOD concluded "there are parallels between the capabilities required for DOD to succeed at foreign stability operations and domestic stability operations"[82] as a result of natural or manmade catastrophes. In addition to sharing requirements for strategic objectives, careful planning, and partnerships with other entities, the report concluded that both rely on personnel specially trained for SSTR requirements and that these requirements differ from conventional combat requirements.[83] Like in Iraq and Afghanistan, however, Hurricane Katrina "left no question that the Nation's current incident management plans and procedures fell short of what was needed"[84] to mitigate the storm's catastrophic effects. In its fourth supplemental funding package, the George W. Bush Administration has proposed an additional $1.46 billion for USACE's Mississippi Valley Division and Gulf Coast reconstruction.[85] Developing and maintaining strategic engineering competency capable of preparing for and mitigating the effects of large scale domestic incidents like hurricane relief along the Gulf Coast is of strategic importance.

Conclusion and Recommendations

The Army's modular design and pentathlete leader development methodology, as currently defined, do not ensure the development of the requisite programs and personnel needed for successful SSTR and NRP operations, particularly engineers. According to Nina M. Serafino of the Congressional Research Service "the U.S. military, particularly the Army, has made many adjustments over the past several years to enable troops to perform more effectively in peacekeeping operations…nevertheless, events in Iraq since the United States invaded in 2003 have reinforced arguments that still greater efforts must be made to raise the

possibilities for successful transitions."[86] Additional steps must be made in order to develop and maintain strategic engineering competency essential to SSTR and NRP core tasks if our nation is to achieve its political objectives. Broad recommendations are:

- As part of the Total Army Analysis (TAA) process, ensure appropriate engineer planning, command and control, and operating forces are present, both active and reserve, in the modularized Army to perform stability, security, transition, and reconstruction (SSTR) operations and domestic incident management under the National Response Plan (NRP).
- Increase the accession percentage of engineer undergraduates; research implications of pentathlete requirements such as foreign language proficiency on the recruitment and development of technical and scientific competencies.
- Increase engineer branch fill percentages across the Army through a reduction of branch immaterial assignments.
- Increase manning level within the U.S. Army Corps of Engineers (USACE) to develop strategic competence and provide for greater surge capability; remove civil funding fiscal barriers to the development of strategic engineering competence.
- Increase engineer joint opportunities and address interagency shortfall through placement of engineers in the Department of Homeland Security's Federal Emergency Management Agency (FEMA) and United States Agency for International Development (USAID).
- Reinstate military directors of public works (DPW) as "military essential" under the Federal Activities Inventory Reform Act (FAIR) to manage strategic Base Realignment and Closure (BRAC), Global Rebasing, and military construction (MICLON) initiatives in support of Army modularity.
- Review Officer Education System (OES) to ensure critical SSTR requirements are trained throughout such as training on military support to civil authorities, exposure to the interagency, construction contracting, construction management, military construction to include contingency military construction, procurement and acquisition, cost estimating, negotiating, and strategic communications to include public speaking and public affairs.
- Assess and better focus the Army's Advanced Civil Schooling Program (ACS) and Expanded Graduate School Program (EGSP) to address educational gaps related to technical requirements such as engineering.

- Evaluate and improve the self development domain of leader development in its entirety; more clearly define self development goals and objectives and optimize the use of automation and the internet; critically assess and consider implementing a formal mentorship program that capitalizes on senior leader enterprise management experience.

Strategic engineering competence within the Department of the Army is an essential campaign quality element necessary for bringing conflicts to successful conclusions while simultaneously safeguarding the homeland from catastrophic events. Reconstruction, as part of stability, security, transition and reconstruction operations, represents a new mission set comprised of diverse technical and managerial engineering tasks for which the Army is currently improperly organized, trained, and developed. Implementing these recommendations in addition to other transformation initiatives reduces this campaign quality gap and the associated strategic risk to future reconstruction efforts.

Endnotes

[1] Les Brownlee and Peter J. Schoomaker, "Serving a Nation at War: A Campaign Quality Army with Joint and Expeditionary Capabilities," *Parameters 34* (Summer 2004): 11.

[2] U.S. Department of Defense, Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations, Directive 3000.5 (Washington, D.C.: U.S. Department of Defense, 28 November 2005), 1.

[3] Conrad C. Crane, "Phase IV Operations: Where Wars are Really Won," *Military Review* 85 (May-June 2005), 27.

[4] U.S. Joint Chiefs of Staff, *Military Support to Stabilization, Security, Transition, and Reconstruction Operations Joint Operating Concept, Version 2.0* (Washington, D.C.: U.S. Joint Chiefs of Staff, December 2006), 2.

[5] Ibid., iii

[6] U.S. Department of the Army, *Commissioned Officer Professional Development and Career Management*, Army Pamphlet 600-3 (Washington, D.C.: U.S. Department of the Army, 28 December 2005), 2.

[7] Ibid.

[8] Ibid.

[9] U.S. Army Training and Leader Development Panel, "The Army Training and Leader Development Panel Officer Study Report to The Army," available from http://www.army.mil/atld; Internet; accessed 2 December 2006, OS 2.

[10] Ibid., OS 3.

[11] U.S. Department of the Army, Deputy Chief of Staff, G3/5/7, "Army Leaders for the 21st Century, Final Report," November 2006; available from https://www.us.army.mil/suite/authenticate.do?=cm9nZXIud2lsc29uOlZvbEFybXk4NCEh; Internet; accessed 2 December 2006, 4.

[12] Ibid., 7.

[13] U.S. Department of State, "Post-Conflict Reconstruction Essential Tasks," April 2005; available from http://www.state.gov/documents/organization/53464.pdf; Internet; accessed 2 December 2006.

[14] Conrad C. Crane and W. Andrew Terrill, "Reconstructing Iraq: Insights, Challenges, and Missions for the Military Forces in Postconflict Scenarios," February 2003; available from http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB182.pdf; Internet; accessed 2 December 2006.

[15] U.S. Government Accountability Office, *Rebuilding Iraq – Status of DOD's Reconstruction Program* (Washington, D.C.: U.S. General Accounting Office, 15 December 2006), 3. In the report it states that "on June 28, 2004, the CPA (Coalition Provisional Authority) transferred power to an interim sovereign Iraqi government, the CPA was dissolved, and Iraq's transitional period began. After the Transfer, National Security Presidential Directive 36 (NSPD 36) passed responsibility for the supervision and general direction of U.S. reconstruction assistance in Iraq to the Secretary of State. The directive also established a temporary organization within the department called the Iraq Reconstruction Management Office to facilitate the transition in Iraq. The Project and Contracting Office (PCO), a temporary organization in the Department of Defense, was tasked under NSPD 36 with providing acquisition and project management support. In late 2005, DOD merged PCO with the Army Corps of Engineers Gulf Region Division, which now supervises DOD reconstruction activities in Iraq."

[16] "Gulf Region Division, U.S. Army Corps of Engineers Reconstruction Overview," December 2006, linked from the *Gulf Region Division Home Page* at "Reconstruction Fact Sheets," available from http://www.grd.usace.army.mil/; Internet; accessed 2 January 2007.

[17] Ibid.

[18] Maureen C. Ramsey, "Bulen takes command of Afghanistan Engineer District," 2 August 2006, linked from *Afghanistan Engineer District Home Page* at "News Releases," available from http://www.aed.usace.army.mil/; Internet; accessed 21 January 2007.

[19] Maureen C. Ramsey, "Engineers Mentor Local Contractors," linked from *Afghanistan Engineer District Home Page*, available from http://www.aed.usace.army.mil/; Internet; accessed 21 January 2007.

[20] Ramsey, "Bulen takes command of Afghanistan Engineer District."

[21] U.S. Government Accountability Office, 3.

[22] U.S. Government Accountability Office, *Securing, Stabilizing, and Rebuilding Iraq: Key Issues for Congressional Oversight* (Washington, D.C.: U.S. General Accounting Office, January 2007), 99.

[23] Robert C. Orr, *Winning the Peace: An American Strategy for Post-Conflict Reconstruction* (Washington, D.C.: Center for Strategic and International Studies Press, 2004), 105.

[24] U.S. Department of the Army, Assistant Secretary of the Army for Acquisition, Logistics, and Technology, "A Report on Iraq Reconstruction" (Arlington, VA: Assistant Secretary of the Army for Acquisition, Logistics, and Technology, 29 Sep 2006), 3.

[25] Ramsey, "Bulen takes command of Afghanistan Engineer District."

[26] Orr, 146.

[27] U.S. Joint Chiefs of Staff, 11.

[28] U.S. Government Accounting Office, *Rebuilding Iraq – Status of DOD's Reconstruction Program*, 3.

[29], "2006 and Beyond: What the U.S. Army is Doing," available from http://www.ausa.org/PDFdocs/TBSecRpt/TBear_March_06_optimized.pdf; Internet; accessed on 12 January 2007, 4.

[30] U.S. Army Training and Doctrine Command, "Army Comprehensive Guide to Modularity," available from http://www.forscom.army.mil/weathr/Army_Transformation/Mod_OO_v._1.0.pdf; Internet; accessed on 12 January 2007, viii.

[31] Brian G. Watson, *Reshaping the Expeditionary Army to Win Decisively: The Case for Greater Stabilization Capacity in the Modular Force* (Carlisle Barracks: U.S. Army War College, Strategic Studies Institute, August 2005), 12.

[32] Andrew Feickert, "U.S. Army's Modular Redesign: Issues for Congress, Updated 5 May 2006" available from http://fpc.state.gov/documents/organization/67816.pdf; Internet, accessed on 12 January 2007, 22.

[33] Ibid.

[34] Ibid.

[35] U.S. Government Accounting Office, *Force Structure: Capabilities and Cost of Army Modular Force Remain Uncertain*, (Washington D.C.: U.S. Government Accounting Office, 4 April 2006.

[36] Ibid., 18.

[37] Ibid., 19.

[38] Ibid.

[39] U.S. Joint Chiefs of Staff, 62.

[40] Ibid., 63.

[41] Ibid.

[42] U.S. Government Accounting Office, *Force Structure: Capabilities and Cost of Army Modular Force Remain Uncertain*, 1.

[43] Association of United States Army, 18.

[44] Ibid., 19.

[45] Ibid.

[46] William Clarkson, Engineer Organization Integrator, HQDA, Pentagon, G-3 Force Management Office, email message to author, 4 January 2007.

[47] Ibid.

[48] Donald H. Rumsfeld, *FY 2007 Posture Statement before the Senate Armed Services Committee*, available from http://www.dod.mil/dodgc/olc/docs/TestRumsfeld060207.pdf; Internet; accessed on 2 December 2006, 15.

[49] Clarkson.

[50] Provide cite from DA G3

[51] Larry Olson, "Restoration of Military DPW Positions," briefing slides to Secretary of the Army, Washington, D.C.

[52] Ibid.

[53] Randal Castro, "Engineer Modified Functional Area Assessment," briefing slides to Deputy Chief of Staff, G3, Washington, D.C., 4 April 2005.

[54] U.S. Department of the Army, *Engineering Operations*, Field Manual 3-34, (Washington, D.C.: U.S. Department of the Army, 2 January 2004), C-1.

[55] The U.S. Corps of Engineers Home Page, available from http://www.usace.army.mil/; Internet; accessed 10 February 2007.

[56] Francis J. Harvey, "Building the Future Force While Continuing to Fight The Global War on Terrorism," *Army Magazine*, October 2005, 19.

[57] U.S. Department of Defense, *Defense Language Transformation Roadmap* (Washington, D.C., January 2005), 7.

[58] Leonard Wong et al., Strategic Leadership Competencies, (Carlisle Barracks: U.S. Army War College, September 2003), 11.

[59] Ibid.

[60] Richard A. Pratt, Lieutenant Colonels Assignment Offcier, Engineer Branch, Officer Personnel Management Directortate, Army Human Resources Command, email message to author, 24 Jan 2007.

[61] U.S. Army Human Resources Command, *Advanced Civil Schooling Program Standing Operating Procedures* (Alexandria, VA: U.S. Army Human Resources Command, 1 December 2006), 38.

[62] Ibid., 30.

[63] U.S. Army Training and Leader Development Panel, OS-11.

[64] Mark A. McGuire, "Senior Officers and Strategic Leader Development," *Joint Forces Quarterly* (Autumn-Winter 2001-02): 1.

[65] The U.S. Army Corps of Engineers Home Page, available from http:// www.usace.army.mil/missions/warfighting.html; Internet; accessed 2 December 2006.

[66] U.S. Joint Chiefs of Staff, 1.

[67] U.S. Department of Defense, Joint Officer Management Program Procedures, Instruction 1300.20 (Washington, D.C.: U.S. Department of Defense, 20 December 1996), 28.

[68] U.S. Department of the Army Pamphlet 600-3, 7.

[69] Ibid.

[70] McGuire, 94.

[71] Wong, p.

[72] McGuire, 95.

[73] Wong, 11.

[74] Tom Ridge, *National Response Plan* (Washington, D.C.: U.S. Department of Homeland Security, December 2004), iii.

[75] Ibid., 3-1.

[76] Ibid.

[77] Ibid.

[78] New Orleans District Public Affairs Office, "Hurricane Protection Systems Mission Overview," 1 December 2006, linked from *The U.S. Army Corps of Engineers, New Orleans District Home Page* at "Historical Section," available from http://www.mvn.usace.army.mil/ hps/mission_statement_hist.htm; Internet; accessed on 6 January 2007.

[79] Ibid.

[80] Frances Fragos Townsend, *The Federal Response to Hurricane Katrina* (Washington, D.C.: The White House, 23 February 2006), 131.

[81] New Orleans District Public Affairs Office.

[82] William Schneider, Jr., *Report of the Defense Science Board Task Force on Institutionalizing Stability Operations Within DoD* (Washington, D.C.: U.S. Department of Defense, September 2005), 10.

[83] Ibid.

[84] Townsend, 18.

[85] New Orleans District Public Affairs Office.

[86] Nina M. Serafino, "Peacekeeping and Related Stability Operations: Issues of U.S. Military Involvement," 18 May 2006; available from http://www.fas.org/sgp/crs/natsec/IB94040.pdf; Internet; accessed 6 January 2007, CRS-2.